CONTENTS

Optical Techniques for Nuclear Reactor Inspection 1
by B. A. Tozer

Risks Associated with Nuclear Material Recovery and Waste Preparation 55
by R. R. Fullwood and R. C. Erdmann

Containment Vessel Design and Practice 107
by Y. Bangash

Thermal Aspects of Radioactive Waste Burial in Hard Rock 183
by D. P. Hodgkinson, D. A. Lever and J. Rae

Two-Phase Flow Patterns: A Review of Research Results 219
by S. Z. Rouhani and M. S. Sohal

An Overview of Databanking 261
by R. J. Brissenden

An Assessment of Acoustic Emission for Nuclear Pressure Vessel Monitoring 275
by C. B. Scruby and H. N. G. Wadley

SUBJECT INDEX 299

CONTENTS OF PREVIOUS VOLUMES 303

VOL. 11 1983

VOL
11
198

SUBJECT INDEX

Aberrations – holography 12, 37
Abnormal occurrences 75
ACE formulae for penetration 131
ACI sheer–stress limits 113
Acoustic emission 275
Airborne activity 71
Aircraft impact 119
AGR's 8
AGR fuel elements 37
ALARA goals 63
Analogue to digital conversion of light 27
Angle of view 35
Annular flow 234
Annular-dispersed liquid flow regimes 245
Applied Research Ltd 42
ASME Section III Division 2 containment code 116
Autocorrelation function 232

Bechtel formula for scabbing 131
Boeing-707 120
Borosilicate glass 192
Boundary effects on flow 250
Boussinesq approximation 205
Bubble to slug flow transition 247
Bubble flow 220
BWR fuel bundles 249
BWR's 108, 219

CEGB 285
Chemical effluent risks 77
Churn flow 235
COSMOS 262
Concrete-creep and shrinkage 147
Concentrated wastes 65
Containment-model analyses 128
Containment vessel design analysis 140
Contamination 72
Core instrument tubes 15
Countercurrent flows 221
CRAC 63, 71, 85
Cracking 116
Crack advance 277
Crack calculations 177
Crack growth 278
CW laser 38
Culcheth test 285
Cycle fatigue 89

Darcy's equation 204
Database 261
Databanking 261
Defect growth 290
Depository design 187
Depth of field 13, 27, 34
Detection of erosion–corrosion 28
Diagnostics – computers 263
Diode arrays 19
Discontinuous rock masses 203
Display names 264
Distortion 39
Dominant accidents 82
Drag–disk noise analysis 244
Dryout 252
Dry scrap recovery 82
Duchon's equation 142
Dukler 224

Earthquake design 113
Earthquake load 126
Earthquake effects 135
Earth's surface 196
EBOR test 284
Electrical contact probe 228
Environmental loads 126
Erosion–corrosion 8
ESPI techniques 44
European Working Group on Acoustic Emission (EWGAE) 296
Exterior database 268
EXXON plant 60

Far-field models 195
Fatigue cycles 289
Finite element program 123, 169
Fine bubbly to churn–slug 247
Fibre optics 7
Field of view 14
Filter efficiency 105
Flow regime detection methods 226
Fluorocarbon krypton recovery 66
Free–free transitions 48
French reactor safety 122
Fuel cycle overview 57
Fuel reprocessing plant 63
Fuel dissolution 68
Fuels fabrication plant 77

Gamma-ray density measurement 231
Gag assemblies 9
Gardner's hypothesis 246
Gentilly containment vessel 115
GEND report 11
Geological waste disposal 184
Ginna nuclear powerplant 113
Glass blocks 17, 185
Glass temperatures 189
Global fluctuations 135
Granite 198
Groundwater flow 203

Harvest 186, 190
Hartlepool 9
Hazardous chemicals 55

VOL. 11 1983

Heat flux at wall 252
HEMP–ESI code 125
HEPA filter reliability 105
Heysham 9, 38
High level waste 66
Hologrammetry 31
Hologram–advantages 32
Holography–disadvantages 35
Hologram–reconstruction 35
Holographic interferometry 10, 40
Holographic interference 3
Horizontal flow 219
Hot-spot 194
HSST programme 286
Hurricane loads 127
Hydrogen fire 70
Hydrostatic vessel tests 284, 293
Hydrodynamic dispersion 211
Hydrothermal convection 194

Image recording 14
Industrial accident statistics 75, 76
Information storage 33
Inspection of RPV 2, 148
Interior adjective 268
International Society for Photogrammetry 32
INTRA COIN code 212
Institution of Geological Sciences 188
In situ measurements 30
Interference patterns 44
Irradiated fuel 7, 276
IRS formulae for missile penetration 131

Japan–RPV tests 288

Kelvin–Helmholtz instability 245
Krypton recovery 56

Laser micro-spectrochemical analysis 47
Laser scanning camera 23, 27
Laser speckle 3, 40
Laser techniques 1, 24
Linear dose health effects 56
Limit state approach 132, 158
LOCA 109, 222, 254
Local steam generation 256
LOFT 231, 255
Low-dispersion spectrometer 46
LWR fuel cycle 55

Macro command languages 263
Magnox 1, 4, 50
Maintenance activities 74
Manpower requirements 76
Mass spectrometry 50
Martinelli pressure drop correlations 221
Material flow 60
Metal analyser – portable 46
Missile penetration 90, 119, 128
Modelling of cracks 134
Moire fringes 40
Monomeric silica 192
Molecular diffusion 211
MOX powder 60
Multibeam gamma densitometers 255
Multiphase flows in porous media 207
Multi-role combat aircraft 121

NAMMU Code 207
National Academy of Sciences 57
Nd–Yag lasers 48
Noise analysis 234
Noise – background 280
Nodal forces 173
Non-combustible solids 65
Non-destructive evaluation 275
Non-linear dynamic analysis , 125
Non-linear seismic analysis 134
Non-topological structure (computers) 265
Nuclear material recovery 55
Nuclear radiation on glass 17
Nuclear shielding 120
Nuclear steam supply system 109
Nucleate boiling agitation 253
Nuclide transport 211
NUREG-0170 99

Occupational exposure 73
Oil reservoir studies 207
Operating risk 77
Optical fibres 18, 24, 28, 29, 51
Optical techniques 1
Optical viewing systems 12
Optical spectroscopy 45
ORNL 286
Oxide thickness 30

Panum's fusion angle 21
Passenger trains 102
Peclet number 206
Permeable medium model 204
PFR Dounreay 261
Photogrammetric cameras 8
Photogrammetry 31
Photographic emulsion 16
Photography 9
Photography – flash 277
Photography – high speed 226
PISCES-2DELK code 124
Pixels 14
Plasticity 174
Plastic deformation 276
Plasma 45
Plug flow 220
Post-irradiation 1, 4
Power spectral density 232
Pre-formatting 263
Preliminary hazard analysis 61, 85
Pressure vessel design 107
Pressure vessel steels 277
Pressurization cycles 287
Prestressing tendon 116
Probability analysis 128, 233
Protection, security, integrity of computer codes 263
Public radiological accident risks 66, 82
PWR's 10, 108
PWR pressure vessels 294

VOL
11
198

PWR steam generators 29
Pye Unican 42

Quantum Products Ltd 46
Quarries 188

Radiological accidents 88
Radiation embrittlement 51, 278
Radiation damage 294
Radiation levels 5
Radioactive waste burial 183
Radiography 281
Radiological accidents 88
Radial tension bars 113
Random fluctuations 232
Rancho Seco 118
Rank–Hilger 42
Rayleigh damping 124
Rayleigh number 206
Rayleigh wave 279
Reactor core component examination 15
Reactor coolant systems 118
Re-heat cracking 284
Relational database theory 265
RELAP 5 222
Remote viewing 18, 65
Resolving power 13
Resolution of human eye 21, 34
Riera-approach
Rock parameters 196
Rock failure 200
RPV construction difficulties 112
RPV data 114
RPV fabrication 281
RPV integrity 281
RPV pre service inspection 281
RPV standards 117
RPV monitoring 275, 281, 295

Safety assurance 2
Sandia caste tests 92
SARCASTIC code 121
Scabbing thickness 130
Seismic analysis 132
Seismic reinforcement 142
SGHWR 1
Sizewell 2
Signal averaging 280
Slug flow 243
Slug to churn transition 248
Slug–bubble section 249
Soil modelling 136
Soil-structure interaction 136
Solidified high level waste 96
South Carolina Licensing Submittal 56
Spherical domes (RPV) 140
Stable hard rock formation 184
Stagnant gas bubble 245
Steel-lined reinforced concrete basement 112
Stefan's law 200
Stereoscopic system 21
Stereoscopic television 22
STARDYNE 123
Stratified smooth flow 220
Stratified–waving flow 254
STRIPA mine (Sweden) 188
Stress relief cracking 283
Structural materials 96
Substitution 270
Surface contour 27

Taylor type bubbles 248
Television 5, 16
Temperature distributions in waste disposal 189
Tendon stress 145
Thermal spalling 201
Thermal stresses 194, 200
Three Mile Island 3, 56, 115
Three dimensional imaging 35
Tornado strikes 90
Tornado loads 127
Tornado generated missiles 121
TRAC 222
Transducers 275
Transportation Class B 99
Transportation of fuel 88
Transportation of powder 94
Transportation risks 85
Transactions 281
TRIUMPH camera 10, 24
Turbine rotor pieces 119
Two-phase flow 219

UID's 262
Ultrasonic indications 279, 281
UO_2 powder 78
Uranium purification 69
U.S. Army Corps of Engineers 121

Vapour slugs 253
Vertical flow 246
Vitrified high level waste 184
Void coalescence 293
Void fraction 243, 248
Void profiles 234
Von Mises criteria 124

Wall friction 251
Wall roughness 251
Waste characteristics 185
Waste preparation 55
WASH-1192 76
WASH-1318 89
WASH-1400 71
Wave propagation 278
Weber number 249
Weld bead profiles 27
Weld glue solidification 282
Weld monitoring 282
Wispy–annular flow 252
Worker radiological accident risk 71

X-ray attenuation picture 227

Yellow cake 57

VOL. 11 1983

VOL
11
198

CONTENTS OF PREVIOUS VOLUMES

VOLUME I

Prompt Alpha and Reactivity Measurements on Fast Metal Assemblies, J. T. MIHALCZO; The Separation Nozzle Process for Enrichment of Uranium-235, E. W. BECKER; Electromagnetic Flowmeters for Fast Reactors, R. C. BAKER; The Insurance of Nuclear Installations, H. W. FANCIS; Noise Analysis Experience of a BWR Power Plant, K. FUKUNISHI, M. IZUMI, K. KATOH, S. KOBAYASHI, and T. DOI; A Study of Two-Phase Flow Characteristics Using Reactor Noise Techniques, R. D. CROWE, S. W. EISENHAWER, F. D. MCAFEE, and K. W. ALBRECHT; Investigation of the Local Component of the Neutron Noise in a BWR and its Application to the Study of Two-Phase Flow, G. KÓSALY, LJ. KOSTIĆ, L. MITEFF, G. VARADI, and K. BEHRINGER; Identification of Neutron Noise Sources in a Boiling Water Reactor, W. H. SIDES, JR.; Experimental Studies of Core Flow Fluctuations and Neutron Noise in a BWR, K. MATSUBARA, R. OGUMA, and M. KITAMURA; Description of Void Effects in a Large BWR by Means of a Stochastic Theory and Simulation in a Zero Power Reactor, M. MATTHEY; BWR Simulation Diagnosis by Noise Analysis, Y. ANDO, S. KANEMOTO, Y. TAKIGAWA, and A. TANABE; Characterization Studies of BWR-4 Neutron Noise Analysis Spectra, M. V. MATHIS, C. M. SMITH, D. N. FRY, and M. L. DAILEY; Observation of In-Core Instrument Tube Vibrations in a Boiling Water Reactor by Evaluating Reactor Noise Data; K. BEHRINGER, LJ. KOSTIC, and W. SEIFRITZ; Experimental and Theoretical Noise Analysis Investigations in Boiling Water Reactors, P. GEBUREUCK, O. P. SINGH, and D. STEGEMANN; Experimental and Numerical Investigation of the Local and Global Components of Boiling Noise, J. VALKÓ and L. MESKÓ; A New Correlation Method for Transit-Time Estimation, H. NISHIHARA and H. KONISHI; Identification of BWR Dynamics from Autoregressive Analysis of Multivariable Experiments, M. KITAMURA, K. MATSUBARA, and R. OGUMA; Course-Graining of Fluctuations and Preservation of Normality, K. SAITO; Analysis of Irreversible Circulation of Reactor Noise, K. KISHIDA, N. YAMADA, T. SEKIYA, M. UTSURO and Y. KIMURA; Consideration on the Coherence Functions of At-Power Reactor Noise, Y. KURODA and M. YAMAGUCHI; Reactivity Effects and Space-Domain Noise Caused by Randomly Dispersed Nuclei in a Reactor Core; H. VAN DAM; Neutron Noise Sources in PWRs, J. A. THIE; Borssele PWR Noise: Measurements, Analysis and Interpretation, E. TÜRKCAN and J. B. DRAGT; Improved PWR Neutron Noise Interpretation Based on Detailed Vibration Analysis, D. WACH and R. SUNDER; Investigations on the Vibrative Excitation of PWR Pressure Vessel and Internals by Pressure Noise Analysis and Model Calculations, V. BAUERNFEIND; Neutron Noise Monitoring of Pressurized Water Reactor Internal Vibrations, C. W. MAYO and R. L. CURRIE; Monitoring of Core Support Barrel Motion in PWRs Using Ex-Core Detectors, J. C. ROBINSON, J. W. HARDY, G. R. SHAMBLIN, and C. L. WOLFF; Analysis of Changes with Operating Time in the Calvert Cliffs Unit 1 Neutron Noise Signals, J. H. STEELMAN and B. T. LUBIN; The Development of Techniques for the Surveillance of LMFBRs, E. J. BURTON, P. G. BENTLEY, J. BISHOP, I D. MACLEOD, and J. A. MCKNIGHT; Boiling Detection in Fast Reactors by Noise Analysis. Studies Performed in France, G. LE GUILLOU, R. BERGER, and M. BRUNET; Noise Analysis Performed at the Sodium Cooled Power Reactor KNK I for Malfunction Diagnosis and Plant Surveillance, P. HOPPÉ and F. MITZEL; The Detection of Sodium Vapor Bubble Collapse in a Liquid Metal Fast Breeder Reactor, W. M. CAREY, A. P. GAVIN, J. P. BOBIS, S. H. SHEEN, T. T. ANDERSON, R. D. DOOLITTLE, and R. W. ALBRECHT; Acoustic Detection of Boiling in LMFBRs; An Estimate of Sensitivity Derived from Experiments During the Commissioning of PFR, I. D. MACLEOD, E. CATLING, and C. G. TAYLOR; Neutron Noise Induced by Vibration on the French Phenix LMFBR, Y. TIGEOT and G. LE GUILLOU; Results of the Temperature Noise Measurements in Subchannels of Sodium Cooled Electrically Heated 28 Rod Bundle Behind a Blockage, E. TURKCAN; Detection of Local Boiling in an LMFBR Subassembly by Temperature Fluctuations Analysis at the Outlet, L. KREBS and G. WEINKÖTZ; Results of Acoustic and Temperature Noise Measurements on Sodium Cooled Electrically Heated, 7-Rod Bundle, T. BISERNA, F. CAVALLINI, S. TAGLIENTI, and V. TOST; A Monte Carlo Approach to the Theoretical Prediction of Temperature Noise in LMFBR Sub-Assemblies; D. FIRTH; Noise and D.C. Balanced Outlet Temperature Signals for Monitoring Coolant Flow in LMFBR Fuel Elements, M. EDELMANN; Determination of Thermocouple Transfer Functions and Fluid Flow Velocities by Temperature Noise Measurements in Liquid Sodium, J. BENKERT, C. MIKA, K. H. RAES, and D. STEGEMANN; Potential U.S. Contributions to In-Reactor Experiments for Fast Reactor Surveillance Systems, R. W. ALBRECHT; Proposal of Application of Some Newly Developing Techniques to Power-Reactor Noise Analysis, H. KATAOKA; Noise Measurements on the KEMA Suspension Test Reactor (KSTR) and the Dodewaard Boiling Water Reactor, J. HOESKSTRA and J. H. C. V.D. VEER; Malfunction Detection of Nuclear Reactor by Dynamic Data System Methodology, M. C. CHOW, S. M. WU, and D. G. CAIN; The Autoregression Time-Series Model for Analysis of a Noisy Signal, J. W. ALLEN; Decomposition of Noise Signals Composed of Many Similar Components, A. GRABNER, P. LIEWERS, P. SCHUMANN, and F. P. WEISS; Estimation and Reduction of Errors in Flow Measurements Which Use Cross-Correlation Techniques, H. BAZERGHI and K. J. ERDULA; Analysis of Pool-Type Reactor Noise, G. C. VAN UITERT and H. VAN DAM; Experience in Loose Parts Monitoring and Operating Nuclear Power Plants, G. L. ZIGLER and D. M. STEVENS; An On-Line Computerized Reactor Noise, Vibration and Loose Parts Monitoring System, P. J. PEKRUL; Loose-Parts Monitoring: Present

VOL. 11 1983

Status of the Technology and Its Implementation in U.S. Reactors, R. C. KRYTER, C. W. RRICKER, and J. E. JONES; Acoustic Emission Surveillance for Improving Availability of Nuclear Power Plants, W. F. HARTMAN and J. W. MCELROY; Detection of Acoustic Emission Events in the Presence of Parasitic Noise, R. FUGE; The Development of Noise Analysis Techniques in the Surveillance of DFR, F. J. BARCLAY and D. TAIT; Review of Noise Analysis in Poland, A. T. MIKULSKI; Diagnosis of Sub-Harmonic Vibrations in Rotating Machinery, J. E. MOTT; A Noise Pattern Library Effort in Japan, K. SAITO; Automated Machinery Surveillance and Diagnostics, D. S. WILSON and J. FRAREY; Nuclear Power Plant Operational Diagnostics and Control, L. G. KEMENY; On-Line Surveillance of LWR Primary Systems. State of the Art and Development Trends of Vibration, Loose Parts and Leakage Monitoring Systems in the FRG, W. H. DIO, H. STOELBEN, W. BASTL, D. WACH, and R. RAIBLE; Experiences With Diagnostic Instrumentation in Nuclear Power Plants, R. GOPAL and W. CIARAMITARO; A Statistical Algorithm to Perform Automated Signature Analysis on Power Spectral Density Data, K. R. PIETY; SMORN-II Summary; An Overview and a Gaze into the Future, R. S. BOOTH.

VOLUME 2

The Use of Nuclear Energy for District Heating, P. MARGEN; Hazards and Control of Ruthenium in the Nuclear Fuel Cycle, G. G. EICHHOLZ; Radioactive Releases from Nuclear Installations: Evaluation of Accidental Atmospheric Discharges, R. H. CLARKE and H. F. MACDONALD; Some Aspects of System Chemistry of BWRs, G. C. W. COMLEY; Models for Estimation of Critical Flow in Two-Phase Systems, J. WEISMAN and A. TENTNER; Progress in Liquid-Metal Fast Breeder Reactor Safety Research and Development — an Overview of the Issues, M. H. FONTANA; Radiation Damage in Graphite and its Relevance to Reactor Design, B. T. KELLY.

VOLUME 3

The Role of the Boltzmann Transport Equations in Radiation Damage Calculations, M. M. R. WILLIAMS; Gamma-Ray Spectral Penetrations: A Review, G. B. BISHOP; Evaluation of the ^{238}U Neutron Cross-Sections for Incident Neutron Energies up to 4 keV, G. DE SAUSSURE, D. K. OLSEN, R. B. PEREZ and F. C. DIFILIPPO; Evaluation of Decay Heating in Shutdown Reactors, V. E. SCHROCK; Source Papers in Reactor Noise, K. SAITO; Chemical Analysis of Atmospheric Aerosols by Instrumental Neutron Actuation, R. HEINDRYCKX and R. DAMS.

VOLUME 4

Radon: Characteristics, Natural Occurrence, Technological Enhancement, and Health Effects, B. L. COHEN; Flow-Induced Vibration in Nuclear Reactors: A Review, R. D. BLEVINS; Water Reactor Safety Research, L. S. TONG; New Applications of the Collision Probability Method in Neutron Transport Theory, T. LEFVERT; Integral Testing of Thorium and ^{233}U Data for Thermal Reactors, J. HARDY, JR., J. J. ULLO and N. M. STEEN; Nuclear Power Plant Licensing Procedures in the United Kingdom, T. P. HAIRE and J. SHAW; Source Papers in Hot Atom Chemistry, G. N. Walton; Accident Analyses Performed for the Norwegian Commission on Nuclear Power, U. TVETEN, D. THOMASSEN and E. KVAAL.

VOLUME 5

Decay Heat, A. TOBIAS; Resonance Absorption Calculations in Thermal Reactors, W. ROTHENSTEIN; Noise Investigations in Boiling-Water and Pressurized-Water Reactors, G. KOSÁLY; Fast Reactor Burnup and Breeding Calculation Methodology, K. O. OTT and R. C. BORG; The Historical Development of Heat Transfer Surfaces for Gas-Cooled Reactors Analysed with a Simple Criterion, D. C. LESLIE; Evaluation of Differential Nuclear Data for Americium Isotopes. Part I: ^{241}Am, J. E. LYNN, B. H. PATRICK, M. G. SOWERBY and E. M. BOWEY.

VOLUME 6

Technical Assessment Task Force Reports Vol I—Summary, L. JAFFEE; Technical Assessment Task Force Reports Vol II—Chemistry, R. E. ENGLISH: Technical Assessment Task Force Reports Vol II—WASH 1400—Reactor Safety Study, R. D. BURNS, III; Technical Assessment Task Force Reports Vol III—Selection, Training, Qualification, and Licensing of Three Mile Island Reactor Operating Personnel, R. EYTCHISON; Technical Assessment Task Force Reports Vol

IV—Pilot-Operated Relief Valve Design and Performance, F. FORSCHER and W. M. BLAND; Public Health and Safety Task Force Reports—Summary, J. I. FABRIKANT; Report of the Office of the Chief Counsel—Emergency Preparedness, S. M. GORINSON et al.

VOLUME 7

Angular Current Approximations in Neutron Transport Calculations using Interface Currents—A Review, P. MOHANAKRISHANAN; Radiation Damage in Non-Fissile Metallic Alloys, F. A. NICHOLS; On the Solution of the Dispersion Equation for Monoenergetic Neutron Transport with Linearly Anisotropic Scattering, V. PROTOPOPESCU and N. G. SJOSTRAND; Acoustic Emission Events from Sodium Vapour Bubble Collapsing: A Stochastic Model, A. COLOMBINO, G. DENTICO, C. GALLI, N. PACILIO, B. PAPALIA, S. TAGLIENTI, V. TOSI and A. VIGO; Special Section on Nuclear Power and its Regulation in the United States, Guest Editor L. M. MUNTZING; The Future of Nuclear Power in the United States, L. M. MUNTZING; Nuclear Power: A Greek Tragedy? J. AHEARNE; Strengthening the Management of the Nuclear Regulatory Commission, H. WELLFORD; A Legislator's View of the Nuclear Option, M. K. UDALL; Nuclear Regulation After Three Mile Island, F. W. LEWIS; Scope and Functions of the U.S. Nuclear Safety Analysis Center, E. I. ZEBROSKI; INPO the Nuclear Man-Machine Interface, E. P. WILKINSON: Financial Support for Nuclear Power Plants, K. HOLLISTER; Nodal Methods for Three-Dimensional Simulators, N. K. GUPTA; Fast Critical Experiments, H. C. PAXTON; Thermal Conduction via the Transport Equation with Applications to Laser-Fusion, S. E. ROUSE and M. M. R. WILLIAMS; Core Temperature Transient in the Early Phase of Core Uncovering at TMI-2, K. H. ARDRON and D. G. CAIN.

VOLUME 8

The Theory of Uranium Enrichment by the Gas Centrifuge, D. R. OLANDER; A Review of the Utilization of Energetic Ions for the Production of Excited Atomic and Molecular States and Chemical Synthesis, M. A. PRELAS and S. K. LOYALKA; The Publications of Boris Davison and Some Reminiscences of the Man, M. M. R. WILLIAMS, S. A. KUSHNERIUK, B. BAY, W. H. WATSON and R. E. PEIERLS; Summary of the Seventh Conference on Transport Theory, P. NELSON and H. D. VICTORY, JR; Hilbert and Chapman-Enskog Asymptotic Expansion Methods for Linear Evolution Equations, J. MIKA; Probability Methods in Homogenization Schemes for Transport Processes, M. WILLIAMS; Automorphism Theorems and Half-Range Theory, H. G. KAPER; Stiff Variational Problem in Linear Transport Theory, M. BORYSIEWICZ; Invariant Imbedding for Curved Geometries and Completeness of the Eigenfunctions of the Angular Redistribution Operator, P. NELSON; Absorber Blackness and Extrapolation Distance, R. ARONSON; Spectrum of Vlasov-Fokker-Planck Operator, P. F. ZWEIFEL and J. OHLMANN; Multiple Collision Solution of the Linearized Vlasov Equation, B. D. GANAPOL; Aspects of Fokker-Planck Transport, N. CORNGOLD; Kinetic Equations in Weak Topologies, W. GREENBERG; Some Nonlinear Problems in Transport Theory, V. C. BOFFI and V. G. MOLNARI; New Results and Open Problems in the Theory of the Vlasov Equation, E. HORST; Neutron Transport in a Reactor System with Temperature Feedback, C. V. PAO; Singular Eigenfunction Analysis of Transport Problems with Spatially Dependent Cross Sections—An Overview, E. W. LARSEN; Neutral Particle Transport in Plasmas, G. C. POMRANING; Approximate methods for Exit Distribution Problems in Inhomogenous Slabs, C. T. KELLEY; A Critique of Inverse Solutions to Slab Geometry Transport Problems, N. J. MCCORMICK; A Finite Transform Approach to the Solution of Radiation Transport Equation, D. V. GOPINATH; Sound Wave Propagation in a Rarefield Gas-II: Gross-Jackson Model, T. C. CHENG and S. K. LOYALKA; Approximation Theory for a Certain Class of Operators and Some of their Applications to Transport Theory, Y. MINGZHU and Z. GUANGTIAN; On the Development of a Convergence Theory of Synthesis Methods for Solving Diffusion Equations, B. NETA and H. D. VICTORY, JR; Solution of the Transport Equation by the BIF Method, E. H. BAREISS and A. J. ANTOLAK; Generation of Neutron Transport Benchmark Problems using BEAPAC-3T, K. L. DERSTINE and E. H. BAREISS.

VOL. 11 1983

VOLUME 9

REACTOR NOISE—SMORN III

Differential and Whitened Correlation—Simple New Methods for Transit Time Measurements, M. EDELMANN; Possibilities of Flow-Pattern Identification by Noise Techniques, D. LUBBESMEYER; Neutronic Response to Two-Phase Flow in a Nuclear Reactor, G. KOSALY, R. W. ALBRECHT, R. D. CROWE and D. J. DAILEY; Measurement of Two Phase Flow Properties Using the Nuclear Reactor Instruments, R. W. ALBRECHT, R. D. CROWE, D. J. DAILEY, M. J. DAMBORG and G. KOSALY; PWR Primary Flow Measurements by Correlation Analysis of Nitrogen 16 Fluctuations, J. M. BOUCHET, M. BRUYERE, P. BERNARD, R. LE MEUR, B. PAPIN, A. BRILLON, J. M. FAVENNEC, J. J. LE COZ and C. PUYAL; Noise Analysis Applications Made at Rajasthan Atomic Power Station, Including Primary

Coolant Flow Rate Measurements Using 16N Signal and the Cepstrum Technique of Analysis, S. S. JOSHI and K. K. ARORA; Application of Neutron Noise Analysis to a Swimming Pool Research Reactor, K. BEHRINGER, V. H. LESCANO, F. MEIER, J. PHILDIUS and H. WINKLER; Out-of-Pile and In-Pile Temperature Noise Investigations: A Survey of Methods Results and Models, G. DENTICO, R. GIOVANNINI, M. MARSEGUERRA, R. OGUMA, N. PACILIO, S. TAGLIENTI, V. TOSI and A. VIGO; Calibration Method for Electromagnetic-Flowmeter Using Cross-Correlation of Voltage Fluctuations, A. ENDOU, F. ASAKURA, Y. MATSUNO and S. NOMOTO; Detection of Local Sodium Boiling in a Simulated LMFBR Fuel Subassembly, H. INUJIMA, T. OGINO, K. HAGA and Y. KIKUCHI; Summary of Session 1, J. B. DRAGT; Partial and Multiple Coherence in Nuclear Reactor Noise, J. B. DRAGT and B. H. BOONSTRA; Coherence Analysis of Systems with Feedback and its Application to a BWR Noise Investigation, R. OGUMA: Multivariate Signal Analysis for Process Noise Source Identification, B.-G. BERGDAHL and R. ESPEFALT; A New Approach to Reactor Noise Analysis by the Dynamic Data System (DDS) Methodology, S. M. WU and M. S. OUYANG; Modern Recognition of Temperatures Produced by Malfunctions in Fast Reactor Fuel Elements, P. G. BENTLEY and M. J. BEESLEY; On-Line Diagnosis Algorithm Based on Noise Analysis, T. TAMAOKI, K. KAWANO and M. SATO; Cause-and-Effect Analysis of Neutronic and Process Signals in a Boiling Water Reactor, M. KITAMURA and B. R. UPADHYAYA; Summary of Session 2, V. TOSI; Some Aspects of the Theory of Neutron Noise Due to Propagating Disturbances, T. KATONA, L. MESKO, G. POR and J. VALKO; Developing Noise Diagnostic Methods Based on Research Factors: Theory and Experiment, I. PAZSIT and I. LUX; Analysis of Root-Mean-Square Temperature Noise in Fast Reactor Fuel Assembly with Local Blockage, T. TAKEDA, Y. SONODA, K. AYA and T. SEKIYA; Investigations of Sodium Boiling Detection in LMFBRs by Reactor Noise Analysis Method, OM PAL SINGH, T. M. JOHN and C. P. REDDY; Acoustic Emission Noise from Sodium Vapour Bubble Collapsing: Detection, Interpretation, Modelling and Simulation, G. DENTICO, V. PACILLO, B. PAPALIA, S. TAGLIENTI and V. TOSI; Relation Between Reactor Noise Analysis and "Not-Linear" Characteristics and Comparative Study on Interpretation of Analysed Reactor Noise, H. KATOAKA; Summary of Session 3, K. SAITO; Determination of Noise Sources and Space-Dependent Reactor Transfer Functions From Measured Output Signals Only, J. E. HOOGENBOOM, H. VAN DAM, E. B. J. KLEISS, G. C. VAN UITERT and D. VELDHUIS; Effects of Spatial Higher Harmonics and Reactivity Feedback Upon At-Power Reactor Noise Patterns, H. KONNO and K. SAITO; Study of Stochastic Reactor Kinetic Equation, Y. GOTCH; Contraction of Information and Models in Reactor Noise Analysis, K. KISHIDA; A Random-Parametric Reactor Model with Direct Feedback and Non-White Noise, O. SAKO, A. TANIGUCHI and Y. KURODA; Safety Aspects of Temperature Fluctuations During Nuclear Reactor Transients, Y. BEN-HAIM; Summary of Session 4, M. M. R. WILLIAMS; Report on the IAEA–IWGFR Specialists Meeting on "Sodium Boiling Noise Detection" 9–11 June 1981, E. J. BURTON; Off-Line and On-Line Noise Analysis for Core Surveillance in French LMFBR "Anabel", J. GOURDON and R. CASEJUANS; Advances in Signal Processing for LMFBR Diagnostic Techniques, E. J. BURTON, D. FIRTH, I. D. MACLEOD and J. A. MCKNIGHT; Functions and Structure of the Karlsruhe Subassembly Monitoring System Kasumos, M. EDLEMAN and H. MASSIER; Reactor Noise Analysis of the Experimental Fast Reactor Joyo, S. TAMURA, H. OTANI, H. TANIYAMA, T. SANDA, K. SANO and T. IKEGAMI; A General Theory of Neutron Noise in Fast Reactors and its Implications for the Interpretation of Experimental Data, M. KANTROWITZ and J. DORNING; Summary of Session 5, J. GOURDON; Neutron Noise Monitoring of Reactor Core Internal Vibrations at PWRs in Japan, Y. FUJITA and H. OZAKI; Review of Borssele PWR Noise Experiments, Analysis and Instrumentation, E. TURKCAN; Surveillance of Vibrations in PWR, F. AKERHIELM, R. ESPEFALT and J. LORENZEN; Quantitative Monitoring and Diagnosis of French PWRs' Internal Structures Vibrations by Excore Neutron Noise and Accelerometers Analysis, P. BERNARD, C. MESSAINGUIRAL, J. C. CARRE, A. EPSTEIN, R. ASSEDO and G. CASTELLO; Advances in Automated Noise Data Acquisition and Noise Source Modelling for Power Reactors, N. E. CLAPP, JR., R. C. KRYTER, F. J. SWEENEY and J. A. RENIER; Experiences with Noise Surveillance Systems in German LWRs, W. BASTL and D. WACH; Summary of Session 6, R. W. ALBRECHT; Loose Part Detection Using Acoustic Emission Detectors in NSSS, J. MARINI and D. BERNARD; Shock and Vibration Analysis on the Impact of Metal Parts for PWR Diagnosis, K. FUJITA and M. TANAKA; PWR Core Monitoring by Incore Noise Analysis, P. BERNARD, J. CLOUE, C. MESSAINGUIRAL, R. BAEYENS, P. MATHOT, J. SATINET and C. PUYAL; Neutron Noise Measurements on Bugey 2 PWR, J. MARINI, D. ROMY, J. C. SPADI, R. ASSEDO and G. CASTELLO; Low Frequency Pressure Oscillations in a PWR, G. GRUNWALD, G. HESSEL, P. LIEWERS and W. SCHMITT; Detection and Monitoring of Boiling in PWRs by Incore Neutron Noise Analysis, P. BERNARD, J. CLOUE and C. MESSAINGUIRAL; Automated Vibration Monitoring System for WWER-440 Nuclear Power Plant Diagnostics and Surveillance, E. HOLLO, P. SIKLOSSY and ZS. TÓTH; Summary of Session 7, DR. BASTL; Noise Analysis of the Dodewaard Boiling Water Reactor: Characteristics and Time History, J. H. C. V. D. VEER and N. V. KEMA; Application of Noise Analysis Methods to Monitor Stability of Boiling Water Reactors, B. R. UPADHYAYA, J. MARCH-LEUBA, D. N. FRY and M. KITAMURA; Second Transit Time in a BWR Power Plant: Experimental Evidence, A. FEDERICO, C. GALLI, C. PARMEGGIANI, R. RAGONA and V. TOSI; Investigation of the Relation Between the RMS-Neutron-Noise and Local Void Fraction in the Bubbly Flow Region of a BWR, L. MITEFF and K. BEHRINGER; Operating Experience of a BWR Plant Diagnostic System, Y. ANDO, S. KANEMOTO, F. YAMAMOTO, T. ITO, K. HAMADA and Y. HASHIMOTO; Determination of BWR Incore Power Feedback Effects by Radial Coherence Measurements, E. B. J. KLEISS, Application of Autoregressive (AR) Stability Estimation, T. MITSUTAKE, S. TSUNOYAMA and H. NAMBA; Summary of Session 8, G. KOSÁLY; Summary Report on Reactor Noise Analysis Benchmark Test, N. SUDA; Smorn-III Summary, J. HIROTA.

VOL
11
198

VOLUME 10

The Safety of CO_2 Cooled Breeder Reactors Based on Existing Gas Cooled Reactor Technology, W. B. KEMMISH, M. V. QUICK and I. L. HIRST; RETRAN Thermal–Hydraulic Analyses: Theory and Applications, L. J. AGEE; Reactor Pressure Vessel Design and Practice, Y. BANGASH; Applications of a Fracture Mechanics Model of Structural Reliability to the Effects of Seismic Events on Reactor Piping, D. O. HARRIS and E. Y. LIM; Denaturing Fissile Materials, A. DEVOLPI; Radiation Doses to the Public from the Nuclear Industry, J. H. FREMLIN and C. K. WILSON; Changes in the Nuclear Power Industry After TMI, N. J. MCCORMICK; The Dynamics of Institutional Changes Following the TMI Accident, E. L. ZEBROSKI; Impact of Post-TMI Regulations on a Nuclear-Oriented Utility, C. REED; Impact of TMI on Combustion Engineering Technical Activities, W. E. BURCHILL; Impact of the Accident at Three Mile Island on an NSSS Vendor — A Westinghouse Perspective, D. H. RAWLINGS; The Human Factor in Nuclear Power Plant Safety: Progress Since Three Mile Island, S. H. HANAUER; Nuclear Personnel Training After TMI-2: The GPUN Response, R. L. LONG, D. P. GAINES and R. A. KNEIF; Emergency Planning and Preparedness Since Three Mile Island, B. K. GRIMES, S. L. RAMOS and B. H. WEISS; The Impact of TMI Upon the Public Acceptance of Nuclear Power, B. D. MELBER.

VOL.
11
1983